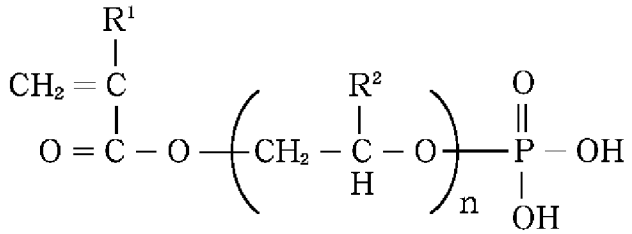
B. Claims

A complete listing of all the claims appears below; this listing replaces all earlier amendments and listings of the claims.

1. (Currently Amended) An electrolyte membrane comprising a siloxane-based polymer, wherein the siloxane-based polymer is obtained by vinyl polymerization of a hydrolysis product of a silane compound having a (meth)acrylate functional group ~~or a hydrolysis product thereof~~ and a methylalkoxysilane with a molar ratio of the silane compound having the (meth)acrylate functional group in total silanes from 10 to 80%, and a (meth)acrylate compound having a phosphate group, followed by siloxane crosslinking.

2. (Cancelled)

3. (Original) The electrolyte membrane according to claim 1, wherein said (meth)acrylate compound having a phosphate group is a compound represented by the following general formula (A):



(A)

wherein R^1 represents H or CH_3; R^2 represents H, CH_3 or CH_2Cl; and n represents an integer from 1 to 10.

4. (Original) The electrolyte membrane according to claim 1, wherein the membrane is hardened with a hardening agent or a siloxane crosslinking component.

5. (Original) A solid polymer fuel cell comprising an electrolyte membrane of a siloxane-based polymer according to claim 1.

6. (Currently Amended) A method for producing an electrolyte membrane comprising a phosphate-containing siloxane-based polymer, the method comprising the steps of:

providing [[an]] a silane compound having a (meth)acrylate functional group, a methylalkoxysilane and a (meth)acrylate compound having a phosphate group with a molar ratio of the silane compound having the (meth)acrylate functional group in total silanes from 10 to 80%;

carrying out hydrolysis-polymerization of the silane compound to form a siloxane polymer having a (meth)acrylate functional group;

carrying out vinyl polymerization with the siloxane polymer and the (meth)acrylate compound having a phosphate group to obtain a siloxane-based polymer;

forming a membrane from the siloxane-based polymer; and

crosslinking the siloxane-based polymer.

7. (Cancelled)